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( Reaffirmed 2000 )

# *Indian Standard*

# SPECIFICATION FOR CHROME MANGANESE

## ( *First Revision* )

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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*March* 1986

# *Indian Standard*
# SPECIFICATION FOR CHROME MANGANESE
## *( First Revision )*

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# *Indian Standard*

# SPECIFICATION FOR CHROME MANGANESE

## *( First Revision )*

## 0. FOREWORD

**0.1** This Indian Standard ( First Revision ) was adopted by the Indian Standards Institution on 24 September 1985, after the draft finalized by the Ferro Alloys Sectional Committee had been approved by the Structural and Metals Division Council.

**0.2** This standard was first published in 1985. In this revision provision has been made for determining the chemical composition by any established instrumental/chemical method and provision has been made for range of particle size.

**0.3** Chrome manganese is mainly used for the production of austenitic stainless steel where part of nickel is replaced by manganese. The alloy is available with or without nitrogen.

**0.4** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

## 1. SCOPE

**1.1** This standard covers requirements for chrome manganese used in steel industry.

## 2. GRADES

**2.1** Chrome manganese shall be of two grades, as specified in Table 1.

## 3. SUPPLY OF MATERIAL

**3.1** General requirements relating to the supply of chrome manganese shall be as laid down in IS : 1387-1967†.

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*Rules for rounding off numerical values ( *revised* ).

†General requirements for the supply of metallurgical materials ( *first revision* ).

## 4. CHEMICAL COMPOSITION

**4.1** The chemical composition of the material when determined in accordance with any established instrumental/chemical method shall be as given in Table 1. In case of dispute the referre method shall be as agreed to between the supplier and the purchaser.

**TABLE 1 CHEMICAL COMPOSITION OF CHROME MANGANESE**

( *Clauses* 2.1 *and* 4.1 )

| Sl No. | Grade | Composition, Percent | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Chromium | Manganese | Silicon | Nitrogen | Carbon, *Max* | Phosphorus, *Max* | Sulphur, *Max* | Aluminium, *Max* | Iron |
| i) | Cr53Mn23 | 50·0 to 55·0 | 20·0 to 25·0 | 2·0 to 3·0 | — | 0·050 | 0·040 | 0·050 | 0·10 | Remainder |
| ii) | Cr50Mn20N8 | 46·0 to 53·0 | 17·0 to 22·0 | 2·0 to 3·0 | 6·0 to 9·0 | 0·050 | 0·040 | 0·050 | 0·10 | Remainder |

**4.1.1** The supply of material of a composition with limits outside those specified in Table 1 shall be subject to agreement between the supplier and the purchaser.

## 5. NOMINAL SIZE RANGES

**5.1** Chrome manganese is supplied in lumps or as crushed and screened particles. The particles size ranges and tolerances shall be in accordance with Table 2. The undersize values shall be valid at the point of delivery to the purchaser.

**TABLE 2 PARTICLE SIZE**

| Class | Particle Size Range mm | Undersize, *Max* Percent by Mass |
|---|---|---|
| 1 | 2 to 50 | 3 |
| 1A | 20 to 50 | 10 |
| 2 | 2 to 25 | 5 |
| 3 | upto 2 | — |

Note — Maximum 10 percent by mass of oversize is allowed in all the classes and no piece shall exceed 1·15 times the maximum limit of size range specified in two or three directions.

**5.2** If the purchaser requires different size ranges and or tolerances other than those given in Table 2, these shall be agreed upon between the supplier and the purchaser.

## 6. EXTRANEOUS CONTAMINATION

**6.1** The material shall be reasonably free from extraneous contaminations like slag and non metallic inclusions, etc.

## 7. SAMPLING

**7.1** The material shall be sampled in accordance with IS : 1472-1977*.

## 8. PACKING

**8.1** The material shall be supplied packed in suitable containers in quantities mutually agreed to between the supplier and the purchaser.

## 9. MARKING

**9.1** The material shall be marked with the following details:

a) Supplier's name or trade-mark, and

b) Grade.

**9.1.1** The material may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ) Act, and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

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*Method of sampling ferro alloys, for determination of chemical composition ( *first revision* ).

# INTERNATIONAL SYSTEM OF UNITS ( SI UNITS )

## Base Units

| QUANTITY | UNIT | SYMBOL |
|---|---|---|
| Length | metre | m |
| Mass | kilogram | kg |
| Time | second | s |
| Electric current | ampere | A |
| Thermodynamic temperature | kelvin | K |
| Luminous intensity | candela | cd |
| Amount of substance | mole | mol |

## Supplementary Units

| QUANTITY | UNIT | SYMBOL |
|---|---|---|
| Plane angle | radian | rad |
| Solid angle | steradian | sr |

## Derived Units

| QUANTITY | UNIT | SYMBOL | DEFINITION |
|---|---|---|---|
| Force | newton | N | 1 N = 1 $kg.m/s^2$ |
| Energy | joule | J | 1 J = 1 N.m |
| Power | watt | W | 1 W = 1 J/s |
| Flux | weber | Wb | 1 Wb = 1 V.s |
| Flux density | tesla | T | 1 T = 1 $Wb/m^2$ |
| Frequency | hertz | Hz | 1 Hz = 1 c/s ($s^{-1}$) |
| Electric conductance | siemens | S | 1 S = 1 A/V |
| Electromotive force | volt | V | 1 V = 1 W/A |
| Pressure, stress | pascal | Pa | 1 Pa = 1 $N/m^2$ |

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